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Date: September 14, 2005

Re: Oklahoma Poultry

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INJUNCTIVE RELIEF****I. INTRODUCTION**

Goal: an injunction that there will be no land application of poultry waste above agricultural limits and Defendants must properly dispose of and manage waste (not growers).

II. LEGAL BASIS FOR PRELIMINARY INJUNCTION

Proof: Ownership of Waste

[legal authorities that this is Integrator's waste]
[proof/facts establishing ownership]

Fed R. Civ. P. 65: A preliminary injunction will issue if the moving party establishes:

- (1) irreparable injury will be suffered unless the injunction issues; [environmental injury can seldom be remedied by money damages and is often permanent or long lasting – therefore, the balance of laws usually favor an injunction to protect the environment] *Amoco Production Co. v. Village of Gabrill*, 480 U.S. 531, 545 (1987); *Castro Co. Bd. Of Comm'rs v. U.S. F & W Service*, 33 F.3d 1429, 1440 (Cir.1996) and *Wilco v. Amoco Corp.*, 989 F Supp. 1159, 1177, (D. Wyo. 1998), *Citizens v. U.S.*, 731 F.Supp 970, 996 (D. Colo. 1989);
- (2) the threatened injury outweighs the damage the injunction may cause the opposing party;
[what are Defendants' damages?]
- (3) the injunction is not adverse to the public interest; and
- (4) there is substantial likelihood of success on the merits of Plaintiff's claim.
[if claim is based on – RCRA - need to prove elements and waste – imminent and substantial endangerment]

Herman v. Salt Lake City, 348 F.3d 1182, 1188 (10th Cir. 2003) (quoting Resolution Trust Corp v. Cruce, 972 F.2d 1195, 1198 (10th Cir. 1992)); Star Fuel Marts, LLC v. Sam's East, Inc., 362 F.3d 639, 651 (10th Cir. 2004).

Proof: There are heightened proof requirements for:

- (1) a preliminary injunction that disturbs the status quo;

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- (2) a mandatory vs. a prohibitory preliminary injunction; and
- (3) a preliminary injunction that affords movant substantially all of his relief.

[NOTE: Our case includes all of these elements that would require heightened proof.]

- (4) No proof of actual injury required. It is enough to show that damage or endangerment "may" exist. Wilson v. Amoco Production, 878 F. Supp 1091, 1092 (D. Wyo. 1998).
- (5) But, a court should be cautious and will not find an imminent and substantial endangerment exists if the risk of harm is remote in time, speculative in nature and de minimis in degree. *Id.*

RCRA Citizen's Suit: To prevail on action for preliminary injunction under RCRA: follow Wilson v. Amoco Corporation, 989 F. Supp 1159 (D. Wyo. 1998).

III. PROOF OF IMMINENT AND SUBSTANTIAL ENDANGERMENT

The type of "imminent" injury that can be collected and used in the near term concerns injuries caused by bacteria, eutrophication (THMs and D.O.), sediment toxicity containing high arsenic, and violation of water quality standards (edge of field metals, phosphorus, and other impaired water segments (§303(d)) listings. The proof will require showing the release of hazards from poultry waste land application, the casual connection between the release and injury and the injury or that the release may cause an injury. The following is an outline of the proof we can develop with tasks associated with development.

A. Bacteria Injury

The bacteria we have focused on are: campylobacter (poultry/avian dominant), salmonella, e.coli, total coliform, fecal coliform, enterococcus and staphylococcus.

(1) Proof of Release and Transport from Land Application and Proximity to Injury

- (a) Literature/Articles. Identify and review articles describing bacteria presence and content in poultry manure, litter and land applied fields, and near streams and rivers. [These articles would be relied upon by expert (Olson, Harwood) to testify concerning release and presence in environment in proximity to identified and potential injuries.]

- (b) Dr. Rod O'Connor Samples/Analysis. CDM to obtain Dr. O'Connor waste and soil analysis. Evaluate whether Dr.

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O'Connor could/should testify directly or Olson/Harwood use O'Connor's data to support their opinion on release.

- (c) Edge of Field Samples/Analysis. Use existing/current CDM analysis data (with evidence from investigators concerning recent land application on adjoining field for samples and evidence of location of active poultry houses) to show bacteria in surface water runoff. Proximity of field plus principle component analysis by CDM to show bacteria is associated with land applied poultry waste.

✓ Additional Tasks: (i) Develop new campylobacter analysis methods and collect new edge of field samples and (ii) complete CDM poultry waste and soil analysis project (waiting on Dept. of Agriculture).

- (d) Instream Samples and Analysis. Use existing/current CDM analysis data and USGS data - base and high flows - to show presence of bacteria and principle component analysis and high flow samples to show relationship of bacteria with poultry waste. Use historical USGS bacteria data to show "history" of probable releases.

- (e) Tenkiller Lake Samples and Analysis. Use existing/current CDM data plus historic USGS data to show presence of bacteria in lake water.

- (f) Sediment Sampling and Analysis. Use current/existing CDM data on river and lake sediment analysis along with principle component analysis to show that bacteria originated from land applied poultry waste.

- (g) Spring Water Samples and Analysis. Use current/existing CDM data that shows bacteria in spring water.

- (h) Location of Existing Active Chicken Houses, Recent Land Application, and Amount and Location of Land Application. Testimony of expert (?) connecting and relying on investigator documented active poultry houses and recent land application. Also, computation of the amount of land application in 2005 as well as application proximity to active chicken houses using active chicken houses count and industry information as to number of poultry, flock and amount of manure produced. The concept is to use the data we have about active houses, industry information on the number of poultry per house and waste generated with an industry expert who would testify as to the amount of waste generated and industry practices to land apply

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waste near the poultry house. Opinion will quantify the amount of land applied waste recently and annually applied in the IRW. Also, the expert would testify that waste is applied at or near where it is produced.

- (i) Groundwater Infiltration. Geologist (hydrologist) (expert) to testify that the karst geology in the IRW allows for infiltration of contaminants of concern (COC). Land applied poultry waste will infiltrate groundwater in the area and show itself in springs. Additionally, this groundwater (with the contaminants) will travel to surface waters.

Task: Obtain well water samples and analysis in areas of contaminated springs and GBS victims.

- (j) Source of Bacteria. Dr. Jody Harwood will testify that the types and volume of bacteria in environment is likely from land applied poultry waste and viruses associated with it.

[PCR analysis may be used if we obtain poultry manure samples.]

(2) Proof of Injury

- (a) WQ Standard Comparison. Expert (Olson) to compare Oklahoma WQ standard to contaminant levels for bacteria analyzed in current CDM samples from lakes and streams that exceed the standards.

- (b) Risk Assessment. Expert (Teaf/Coleman- HSWMR) to testify concerning risk and hazard of recreation users exposure to documented levels of bacteria in sediments, river waters and lake waters.

- (c) Non Attainment Listing. Testimony from DEQ or expert (Olson) concerning IRW waters that do not meet Oklahoma WQ standards and non-attaining use as reported in Oklahoma's W.Q. Assessment Integrated Report (303(d) Report)).

- (d) GBS Incidents. Development of the Rutherford evidence that the area of the IRW has seen a significant increase of Guillain Barre Syndrome (GBS). With HSWMR and/or an Epidemiologist, establish that GBS is caused by bacteria (campylobacter) associated with poultry waste and that the increase of this poultry litter bacteria may have resulted in numerous new cases of GBS and/or may lead to many more new cases of GBS.

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- (c) Other Epidemiology. Possible development through local clinics of other increased disease/sickness due to high bacteria levels.
- (f) Well-Groundwater. Use spring data plus new data from wells in the area to establish high bacteria levels in groundwater. Use HSWMR risk assessment to show hazard of use of such water in potable applications, i.e., drinking, bathing, cooking, etc. Also compare groundwater analysis with groundwater W.Q. Standards (OAC 785:45-7).

B. Eutrophication Injury**(1) Proof of Release and Transport from Land Application and Proximity to Injury**

- (a) Literature/Articles. Identify and use articles that discuss Phosphorus in poultry waste and its transport to surface and groundwater. (Expert testimony (uses again).
- Obtain and add sampling and analysis of poultry waste (Dept. of Agriculture)

- (b) Edge of Field, Instream and Lake Tenkiller (water and sediment) Samples and Analysis. Use all data collected by CDM and using principle component analysis to establish that the Phosphorus in chicken waste is found in Lake Tenkiller.

- (c) Volume of Phosphorus Contribution. Need expert to review data on amount of poultry waste that is produced and land applied in the IRW and in opinion that a substantial amount of Phosphorus in Tenkiller is from land applied chicken waste.

- (d) Eutrophication and Low D.O. and THMs. Expert Welch and/or Cooke to testify that low D.O. is a result of Phosphorus loading in lakes and THMs are a result of high phosphorus, algae and reaction of chlorine to lake water.

(2) Proof of Injury.

- (a) Biologist Expert. Expert (Tony Gendusa - CDM?) to testify as to affects of low D.O. and violation of W.Q. Standards, as to diversity and abundance of lake fish and wildlife.
- (b) Toxicologist. HSWMR (Teaf) to testify concerning data of THM formation potential, DEQ reporting data, and other samples/analysis to show, with a risk assessment for THMs associated with drinking water from the public water supplies.

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- (1) Proof of Release and Transport: [Use same evidence as used for bacterial and eutrophication.]
- (2) Proof of Injury
 - (a) Use expert (Olson) – violations of sediment standards in areas of data collected by CDM. Add biologist expert testimony of effects on biota resulting from sediment criteria exceedances.
 - (b) Use biologist expert (CDM) to discuss sediment survey and toxicity testing results.

D. Water Quality Injury

- (1) Proof of Release and Transport: [Use same evidence as above.]
- (2) Use CDM (Olson) to testify that current sampling and analysis data show poultry waste is violating Oklahoma W.Q. Standards.
- (3) Use DEQ to describe IRW segments on non-attainment (303(d)) list.

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Status Report, April 9, 2005 – Illinois River Watershed Studies

Introduction

This document discusses the status of work approved as of April 9, 2005.

Status of Phase 1 Work Tasks 2.1 – 2.12

CDM and Lithochimeia have completed the following tasks:

- Task 2.2, Mapping
- Task 2.3, Aerial Survey
- Task 2.4, Identification of Recon Locations
- Task 2.5, Field Recon of Potential Sampling Sites
- Task 2.6, Selection of Sediment Sampling Locations
- Task 2.7, Sampling and Analyses of Sediment Samples
- Task 2.13, Lake Sampling

Analytical results for the sediment samples (tasks 2.7 and 2.13) collected from the streams and lakes have been received from the laboratories (lake results received on April 6). The Evaluation of Sediment Chemistry (task 2.8) has started and selected data from the streams has been posted on the map of the watershed. Figures showing concentrations ranges by colored "dots" will be distributed in the next few days.

Task 2.11, Aerial Photography, photography is complete and processing is currently being finalized. The actual photos should be available around April 15. Task 2.1, Data Review, and Task 2.12, Work Plans/Meetings, are on going. Task 2.9, Evaluation of Sediment Thickness in TenKiller, will be completed at the end of April in conjunction with Phase 2 tasks. Task 2.10, Evaluation of Source Material, has been replaced by Task 3.6, Soil and Litter/Manure Sampling.

Status of Phase 2 Work Tasks 3.1 – 3.5

A summary of these tasks follow:

- Task 3-1, Source Characterization. This task has been replaced by new Task 3.6, Soil and Litter/Manure Sampling (see below).
- Task 3-2, Reference Characterization. This task includes habitat characterization; benthic, fish and periphyton sampling; sediment toxicity testing; and sediment and water sampling and analyses. A new potential reference stream was identified, Cedar Hollow. This stream has been inspected and samples collected for analyses. Oklahoma scientific collecting permit was obtained, and the Arkansas collecting permit application has been submitted to the state.
- Task 3-3, River Characterization. This task includes habitat characterization; benthic, fish and periphyton sampling; sediment toxicity testing; and sediment and water sampling and analyses. Eight locations in the Illinois River watershed will be selected for sampling. Staff from CDM visited potential locations with Dr. Conrad Kleinholz on April 4 and 5. Opportunistic samples were collected of sediments, litter and runoff.
- Task 3-4, Reservoir Characterization. This characterization will be performed at three locations in Tenkiller Ferry Lake. This task includes benthic and zooplankton/phytoplankton sampling; sediment toxicity testing; sediment and water sampling and analyses; and sediment core age dating. Dr. Eugene Welch of the University of Washington has been contacted for expert advice concerning sampling and analyses.
- Task 3-5, Technical Memorandum. This task includes data reporting.

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Status of New Phase 2 WorkTasks 3.6 – 3.12

These tasks include:

- Task 3.6, Soil and Litter/Manure Sampling
- Task 3.7, High Flow Stream Sampling
- Task 3.8, Edge of Field Sampling
- Task 3.9, Bacteria Analyses by PCR
- Task 3.10, Spring and Seep Sampling
- Task 3.11, Air Sampling (on hold)
- Task 3.12, Evaluation of EDCs in Fish

Task 3.6, Soil and Litter/Manure Sampling

This work includes sampling soils in fields, control areas and litter in poultry houses. The work plan was sent to Dan Parrish, Director of Oklahoma Department of Agriculture, Food, and Forestry, Agricultural Environmental Management Services, on April 8, 2005. We anticipate a conference call early the week of April 11 to schedule training and sampling.

Task 3.7, High Flow Stream Sampling

CDM with support of Lithochimeia will sample lower order streams (smaller basins) at 12 locations. Samples will be collected at each location during four high flow and one normal flow events. All equipment has been ordered and shipped to Lithochimeia in Tulsa. Installation of the automatic sampling stations at each of the locations will start on Monday April 11. Installation should be complete in approximately ten days.

Task 3.8, Edge of Field Sampling

To document actual release of contamination from fields on which litter has been applied, samples of the runoff during and after rainfall events will be sampled. To locate appropriate fields, public assess locations near fields (ditches, etc) will be surveyed using a portable XRF (x-ray fluorescence) instrument. This instrument can quantify metal concentrations in soil very rapidly and is an EPA approved method. Based on this survey of many locations, we will select potential locations (high soil concentrations) to collect water samples during or immediately after runoff events. The selection of these locations will be coordinated with separate efforts to identify and verify field application of litter. We anticipate surveying 80 to 100 locations and selecting 20 locations for collection of soils and runoff (water). This task will start the Week of April 24.

Task 3.9, Bacteria Analyses by PCR

As previously discussed, PCR analyses are anticipated to provide a definitive identification and quantification of bacteria associated with chicken litter. However, the appropriate and exact genetic DNA sequences to evaluate must first be determined. This will be performed on five samples of chicken litter collected during task 3.6. After the appropriate and unique genetic materials are identified, the PCR method will be validated on actual soil and water samples.

Dr. Valerie (Jody) Harwood of the University of Southern Florida has agreed to assist as an expert. She has been sent the scope of work and related articles. The scope of work will be discussed with Dr. Harwood early the week of April 11. In addition, she will assist in identify appropriate literature to review before any laboratory work is started.

Task 3.10, Spring and Seep Sampling

Over 50 springs have been identified in the Illinois River watershed. These springs are a result of groundwater flow and may be impacted by litter. Twenty springs will be sampled and analyzed. The results will provide a preliminary indication of groundwater contamination in the watershed.

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A date for sampling of the springs and seeps has not been selected but will probably occur during the last week of April or first week of May.

Task 3.12, Evaluation of EDCs in Fish

The purpose of this study is to determine if EDCs are causing endocrine disruption in fish found in the Illinois River and Tenkiller Ferry Lake. The sexual development in fish can be altered if exposed to EDCs. Male fish exposed to estrogens can become feminized, produce egg proteins, and have smaller reproductive tissues. Largemouth bass (*Micropterus salmoides*) and common carp (*Cyprinus carpio*) will be collected and analyzed for plasma vitellogenin (VTG); estrogen metabolites; sex histological of gonadal tissue, ovaries, and liver; gonadosomatic index; and hepatosomatic index.

Dr. Peter Thomas of the University of Texas-Austin has agreed to assist in this task as an expert. He has received the scope of work and preliminary conversations have been conducted. He will formally make some recommendations during the week of April 11.

Additional Tasks

USGS Sampling and Analyses: Lithochimeia and CDM have been working with the USGS (through Kelly Burch and Bill Cauthron) to coordinate sampling of higher order (larger) streams during high flow. Bill Cauthron and USGS personnel were sent an expanded work plan on April 1, 2005. Follow up discussion concerning coordination are planned during the week of April 11.

Owner and Land Application Site Identification: _____

Stratus Damage Evaluations: _____

HydroQual Modeling: _____

Task 3.7, High Flow Stream Sampling

CDM will sample lower order streams (smaller basins) at 12 locations. Samples will be collected at each location during four high flow and two normal flow events. All equipment was successfully installed during the weeks for April 10 and 17. This time was followed by a unusually dry period. One high flow sample was collected during the week of May 23. Five samples were collected during the week of June 6 and seven samples were collected last week (week of June 13). The first base (normal) flow sampling event is scheduled for the week of July 10 and the second base flow event is scheduled during the week of August 22 (coordinated with other sampling, see tasks 3.2 and 3.3). The USGS will sample higher order streams at six locations during four high flow events and two base flow events. CDM will pay for the estrogen metabolite and bacteria analyses for the USGS samples (see footnote 4 on the attached spreadsheet). Because of the unusual dry period, the automatic samplers may be left in the field longer than originally anticipated. This may require additional costs. No increase in budget is shown at this time.

Task 3.8, Edge of Field Sampling

To document actual release of contamination from fields on which litter has been applied, samples of the runoff during and after rainfall events will be sampled. Originally, a survey of soil contamination was planned to select locations for water sampling. Instead, opportunistic samples have been collected after rainfall events from ditches and shallow, subsurface collection devices. The shallow collection devices are PVC pipe installed into the ground next to application fields. To date, 30 locations have been sampled and analyzed.

Task 3.9, Bacteria Analyses by PCR

PCR analyses are anticipated to provide a definitive identification and quantification of bacteria associated with chicken litter. However, the appropriate and exact genetic DNA sequences to evaluate must first be determined. In addition, additional samples of feces from other sources (cow, swine, ducks, etc) will be analyzed to confirm the unique character of chicken litter. After the appropriate and unique genetic materials are identified, the PCR method will be validated on actual soil and water samples.

Dr. Valerie (Jody) Harwood of the University of Southern Florida has reviewed the scope of work and her suggestions have been incorporated. In addition, two preliminary steps have been identified which at the conclusion of these two tasks, the work can be terminated if appropriate results are not found. The revised scope of work has been approved by Bert Fisher. Based on the comments of Dr. Harwood and the addition of the check steps, the costs have changed slightly (see footnote 5 on the attached spreadsheet).

Task 3.10, Spring and Seep Sampling

Over 50 springs have been identified in the Illinois River watershed. These springs are a result of groundwater flow and may be impacted by litter. To date, eighteen springs have been sampled and analyzed.

Task 3.12, Evaluation of EDCs in Fish

The purpose of this study is to determine if EDCs are causing endocrine disruption in fish found in the Illinois River and Tenkiller Ferry Lake. The sexual development in fish can be altered if exposed to EDCs. Male fish exposed to estrogens can become feminized, produce egg proteins, and have smaller reproductive tissues. Largemouth bass (*Micropterus salmoides*) and common carp (*Cyprinus carpio*) will be collected and analyzed for plasma vitellogenin (VTG); estrogen metabolites; sex histological of gonadal tissue, ovaries, and liver; gonadosomatic index; and hepatosomatic index.